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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:	Abusamra
Serial No.:	10/731,558
Filed:	December 9, 2003
Group Art Unit:	3681
Examiner:	Rodriguez, Saul
Title:	METHOD AND ASSEMBLY FOR CONTROLLING A CENTRIFUGAL CLUTCH

Mail Stop – Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

APPEAL BRIEF

Dear Sir:

Appellant submits this revised Appeal Brief pursuant to the Notice of Non-Compliant Appeal Brief mailed July 12, 2006. The originally presented brief was deemed non-compliant for not identifying the status of cancelled claims 1-13, and for including non-appealed claims in the claims appendix. Applicant has corrected these non-conformities. No additional fees are believed due, however, the Commissioner is authorized to charge or apply to Deposit Account No. 50-1482 in the name of Carlson, Gaskey & Olds, any additional fees or credits.

REAL PARTY IN INTEREST

The real party in interest is ZF Meritor, LLC, assignee of the present invention.

RELATED APPEALS AND INTERFERENCES

There are no prior or pending appeals, interferences or judicial proceedings related to this appeal, or which may directly affect or may be directly affected by, or have a bearing on, the Board's decision in this appeal.

STATUS OF CLAIMS

Claims 1-13 are cancelled. Claims 14-28 are pending, claims 17,20 and 21 are withdrawn from consideration, claims 22,23 and 28 are objected to, and claims 14-16,18,19 and 24-27 stand rejected.

STATUS OF AMENDMENTS

All amendments have been entered.

SUMMARY OF CLAIMED SUBJECT MATTER

A conventional centrifugal clutch assembly includes a plurality of centrifugal weights that are pivotally mounted to rotate radially outward in response to rotation of the clutch assembly. As the rotational speed of the clutch assembly increases, rollers on the centrifugal weights cause clamping engagement between pressure plates and friction disks to transmit torque to the output shaft. In some instances vehicle operation could be improved by engaging the clutch assembly at different engine speeds. However, conventional centrifugal clutch assemblies begin and end actuation only within a substantially fixed and limited range of engine speed.

The inventive clutch assembly 10 includes a clutch cover 12 fixed to a flywheel 14. The flywheel 14 and clutch assembly 10 rotate about an axis 16 to transmit torque to an input shaft 18. The clutch assembly 10 includes friction disks 20 that are rotatable to drive the output shaft 18. First and second pressure plates 22, 24 move axially to clamp the friction disks 20. A centrifugal weight 26 includes rollers 28 that move within a space 30 defined between a front plate 32 and the clutch cover 12. The front plate 32 includes a ramped surface 34 on which the

rollers 28 move to drive the front plate 32 axially. (Paragraph 15, page 3, lines 17-20; page 4, lines 1-2; Figs 1-2)

Rotation of the clutch assembly 10 creates a centrifugal force that drives the centrifugal weight 26 radially outward along the ramped surface 34. Radial movement of the centrifugal weight 26 moves the front plate 32 axially. Movement of the front plate 32 between clamped and open positions is dependent on the centrifugal force developed by rotation of the clutch assembly 10. A sleeve 38 engaged to the first pressure plate 22 is slideable along the output shaft 18 to move the first pressure plate 22 axially independent of the front plate 32 and clamp spring 36. A drive 42 is provided to move the release sleeve 38 along the output shaft 18. (Paragraphs 16-17; page 4, lines3-20; Figs 1-2)

During normal automatic clutch operation, where the centrifugal weights 26 control engagement of the clutch assembly 10, the sleeve 38 moves with the first pressure plate 22. The pressure plates 22, 24 clamp the friction disks 20 to begin transmitting torque to the output shaft 18. The centrifugal clutch 10 begins actuation at a substantially fixed rotational speed, and also disengages or opens in response to a decrease in rotational speed below the engagement speed. When different clutch engagement characteristics are desired, the sleeve 38 is actuated to selectively engage the clutch assembly 10 independent of engine or clutch rotational speed. (Paragraphs 18-21, page 4, lines21-26; page 5, lines 1-20, Figs 1-2)

Claim 14

Claim 14 recites a method of controlling a centrifugal clutch assembly 10 including the step of monitoring a vehicle operating input and monitoring a vehicle operating output. The method continues with the step of detecting a fault condition responsive to monitored operating outputs being outside of a desired range relative to the monitored operating inputs and disengaging transmission of torque by opening the centrifugal clutch assembly 10 in response to the detected fault condition. (Paragraphs 24-27; page 6, lines 3-24, page 7, lines 1-15; Figure 3).

Claim 24

Claim 24 recites a method of controlling a centrifugal clutch assembly 10 including the step moving a pressure plate 22 axially toward an engaged position in response to radial movement of a plurality of weights 26 caused by rotation of the centrifugal clutch assembly 10 above a desired speed. The method continues with the step of engaging at least one friction plate 20 with the pressure plate 22 to transmit torque to an output shaft 18 and overriding engagement of the pressure plate 22 and friction plate 20 at a speed greater than or equal to the desired speed by moving the pressure plate 22 axially away from the engaged position. (Paragraphs 24-27; page 6, lines 3-24, page 7, lines 1-15; Figure 3).

GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

(1) Is the rejection of Claims 14-16, 18-19, and 24-27 under 35 U.S.C. § 102(b) as being anticipated over U.S. Patent No. 6,502,476 to Genise ("Genise") improper?

ARGUMENT

Claim 14

Claim 14 requires the steps of detecting a fault condition responsive to monitored operating outputs being outside a desired range relative to the monitored operating inputs and opening the centrifugal clutch assembly in response to a detected fault condition.

Genise discloses a method of controlling a centrifugal clutch that includes a provision for preventing overheating of the clutch. The Genise clutch is controlled by varying engine speed to vary the engagement of the centrifugal clutch. The Genise method for controlling the centrifugal clutch involves the control of engine speed to override operator inputs that cause overheating. *"Upon sensing a potential clutch over-heating problem, the control logic can react by increasing, or decreasing engine RPM"*. (Genise, Col 9, lines 15-20). Controlling engine speed does not anticipate the step of opening the centrifugal clutch assembly in response to a detected fault condition as is required by claim 14. Instead, the Genise method simply controls engine speed to obtain desired performance.

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Further, the Examiner is apparently reading a quick release mechanism (200) of the Genise device as meeting the limitation of opening the centrifugal clutch responsive to a fault condition. The Examiner argues that opening the quick release mechanism (200) results in a decrease of speed of the centrifugal clutch, which in turn would cause the centrifugal clutch to open. (Continuation of 11, advisory action mailed March 28, 2006).

The Genise quick release (200) is shown below in the partially reproduced Figure 1 of Genise between the centrifugal clutch (20) and the transmission (14). The schematic view and brief description at Column 9, lines 31-39 is all that is provided to describe the operation of the Genise quick release mechanism (200).

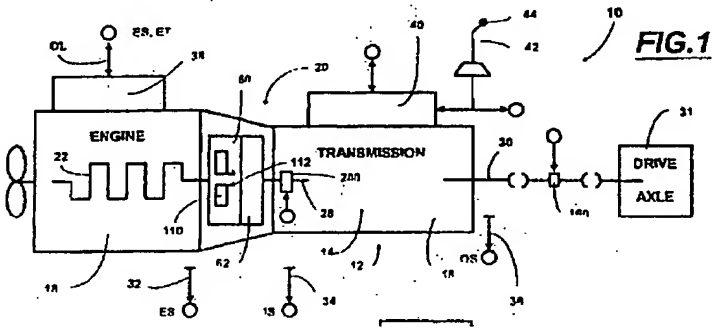


FIG.1

As the quick release mechanism (200) is disposed between the centrifugal clutch (20) and the transmission (14), opening the quick release mechanism (20) to disconnect the transfer of torque between the engine and the transmission (14) does not cause the centrifugal clutch (20) to slow and open as the centrifugal clutch (20) remains driven by the engine. The centrifugal clutch (20) is operated independent of the quick release mechanism (200) and would continue rotation with the engine, and therefore remain actuated or closed until the speed of the engine was decreased.

The Examiner argues that decoupling of the transmission (14) from the engine would *"effectively open the centrifugal clutch, as it would be necessary to avoid overrunning the engine/motor whose load has been removed"*. (Continuation of 11, advisory action mailed March 28, 2006). However, Genise does not disclose this feature, only that torque is decoupled by activating the quick release mechanism (200) to aid in up shifting on a severe grade. (Col 9, lines 32-37) As appreciated, as there is no further explanation for the function of the quick release

mechanism (200) there is nothing in Genise that discloses reducing engine speed as argued by the Examiner. However, the disclosed purpose of aiding up shifting on a severe grade would certainly not include the step of reducing engine speed to decouple the centrifugal clutch (20). Accordingly, this argument is not supported by Genise and does not provide a proper basis for this rejection. Appellant respectfully requests withdrawal of this rejection.

Claim 16

Claim 16 depends from claim 14 and includes the further limitation that the centrifugal clutch assembly includes a plurality of weights movable radially outward responsive to rotation to begin actuation of the centrifugal clutch assembly, and the method further includes the step of overriding the plurality of weights to open the centrifugal clutch assembly.

In the Genise device, the centrifugal weights are never overridden. Instead, the clutch is operated to disengage transmission of torque by either reducing engine speed or by disconnecting torque transmission with a quick release mechanism. Nothing in Genise discloses or suggests overriding the plurality of weights to open the centrifugal clutch assembly. Accordingly, Genise cannot anticipate the limitations of claim 16.

Claim 24

Claim 24 requires overriding engagement of a pressure plate and a friction plate at a speed greater than or equal to the desired speed by moving the pressure plate axially away from the engaged position.

Claim 24 was rejected along with claim 14 above, however little specific explanation was provided as to what features in Genise, the Examiner was reading as meeting the claimed limitations.

The Examiner is believed to be reading the Genise quick release mechanism (200) as anticipating the limitations of claim 24. However, the quick release mechanism (200) is not a centrifugal clutch and does not disclose moving a pressure plate from an engaged position provided by radial movement of a plurality of weights. Instead, Genise discloses that the quick

release mechanism may be a positive or friction clutch (Col 9, lines 37-38), not a centrifugal clutch as is required by claim 24.

The Examiner does not specifically addresses the limitations of claim 24 in any of the office actions. Further, nothing in Genise discloses overriding engagement of a pressure plate and friction plate at a speed greater than or equal to a desired speed by moving the pressure plate axially away from the engaged position. There is simply nothing in Genise that remotely discloses or suggests this feature. For at this reason, Genise cannot anticipate the limitations of claim 24.

Claim 25

Claim 25 depends from claim 24 and includes the limitation of overriding engagement between the pressure plate and the friction plate responsive to the vehicle output being outside a desired range with respect to the vehicle input.

The Genise device does not override any engagement. Instead, the Genise device will either adjust engine speed, or disconnect torque with a quick disconnect device; nothing that discloses or suggests the limitations of claim 25.

Claim 26

Claim 26 depends from claim 25 and includes the step of detecting a condition indicative of stalling of an engine that is driving the centrifugal clutch assembly and overriding engagement to prevent the engine from stalling.

Again, referring to the arguments provided above with regard to claim 14, Genise discloses a method of controlling engine speed independent of throttle position to prevent clutch overheating. Nothing disclosed or suggested by Genise anticipates the limitations of claim 26.

Claim 27

Claim 27 depends from claim 24 and includes the step of moving the pressure plate axially away from an engaged position with a sleeve movable axially along an axis of rotation.

Genise does not disclose a sleeve as claimed. The Examiner reads the Genise element (128) as a sleeve. (Please see reproduced portion of from the Final rejection mailed March December 29, 2005 below). Note that this is the extent of the explanation relating to the rejection of the claims provided prior to the advisory action.

> Genise discloses a method of controlling a clutch assembly comprising, a pressure plate (130), means for monitoring vehicle operating inputs and outputs (THL, ES, IS, OS, GR, T), fault detecting means (Col. 5, lines 15-25; Col. 9, lines 6-31), means for disengaging (Col. 9, lines 5-39; 200) a centrifugal clutch (Fig. 5), throttle position sensor (THL), engine speed sensor (ES), and a sleeve (e.g., 128). Also, concerning claim 26, by controlling the rate of engagement the device of the prior art effectively override engagement of the clutch and avoid stalling (e.g.; Col. 5, lines 44-57; Col. 8, lines 8-22).

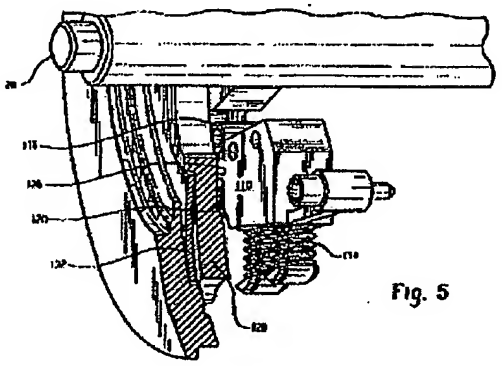


Fig. 5

As is shown, the item indicated by the reference numeral 128 is a ramp plate (Genise, col 6, lines 51-55), not a sleeve. Further, as is shown in the above Figure 5 from Genise, the Genise device does not disclose or suggest any sleeve.

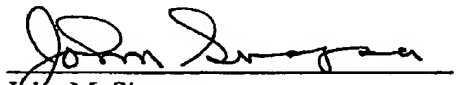
Accordingly, the Genise device does not include a sleeve, and therefore cannot anticipate the limitation of moving a pressure plate axially away from an engaged position with a sleeve as is required by claim 27. Appellant requests that this rejection be reversed.

CONCLUSION

For the reasons set forth above, the rejection of claims 14-16, 18-19, and 24-27 is improper and should be reversed. Appellant earnestly requests such an action.

Respectfully Submitted,

CARLSON, GASKEY & OLDS, P.C.



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Dated: August 9, 2006

CERTIFICATE OF FACSIMILE

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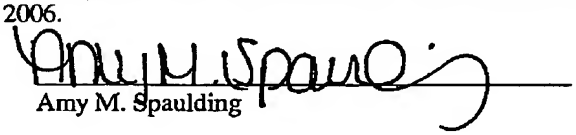

Amy M. Spaulding

CLAIMS APPENDIX

14. A method of controlling a centrifugal clutch assembly comprising the steps of:

a) monitoring a vehicle operating input;

b) monitoring a vehicle operating output;

c) detecting a fault condition responsive to monitored operating outputs being outside of a desired range relative to the monitored operating inputs; and

d) disengaging transmission of torque by opening the centrifugal clutch assembly responsive to said detected fault condition.

16. The method as recited in claim 14, wherein said centrifugal clutch assembly comprises a plurality of weights movable radially outward responsive to rotation to begin actuation of the centrifugal clutch assembly, and said step d) further comprises overriding said plurality of weights to open said centrifugal clutch assembly.

18. The method as recited in claim 14, wherein one of said inputs comprises a throttle position.

19. The method as recited in claim 14, wherein one of said inputs comprises engine speed.

22. The method as recited in claim 16, wherein the plurality of weights are movable radially responsive to rotation of the centrifugal clutch assembly to move a pressure plate axially toward an engaged position and said step d) further comprises moving the pressure plate toward the open position independent of a radial position of the plurality of weights.

23. The method as recited in claim 22, wherein said step d) comprises engaging a sleeve to the pressure plate and moving the pressure plate from a clamped position to an open position.

24. A method of controlling a centrifugal clutch assembly comprising the steps of:

a) moving a pressure plate axially toward an engaged position responsive to radial movement of a plurality of weights caused by rotation of the centrifugal clutch assembly above a desired speed;

b) engaging at least one friction plate with the pressure plate to transmit torque to an output shaft; and

c) overriding engagement of the pressure plate and friction plate at a speed greater than or equal to the desired speed by moving the pressure plate axially away from the engaged position.

25. The method as recited in claim 24, including the step of monitoring a vehicle output with respect to a vehicle input and overriding engagement between the pressure plate and the friction plate responsive to the vehicle output being outside a desired range with respect to the vehicle input.

26. The method as recited in claim 25, including the step of detecting a condition indicative of stalling of an engine that is driving the centrifugal clutch assembly and overriding engagement to prevent the engine from stalling.

27. The method as recited in claim 24, including moving the pressure plate axially away from the engaged position with a sleeve movable axially along an axis of rotation.

28. The method as recited in claim 24, including moving the pressure plate axially toward an engaged position at a speed below the desired speed such that the pressure plate engages the friction disk to transmit torque at a speed below the desired speed that causes actuation by radial movement of the plurality of weights.

EVIDENCE APPENDIX

None

RELATED PROCEEDINGS APPENDIX

None